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# SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE.



DECEMBER 15, 1934

World Without Man  
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SCIENCE SERVICE PUBLICATION

## SCIENCE NEWS LETTER

VOL. XXVI



No. 714

The Weekly Summary of

## Current Science

Published Every Saturday by

## SCIENCE SERVICE

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## DO YOU KNOW?

The black walnut crop this year was above average in quantity and quality.

France is experimenting with rosin as an ingredient in road-surfacing materials.

A new material for insulating electric cords is expected to make the handling of electric appliances safer.

Pig iron got its name because the trenches and side channels in which the molten metal runs suggest sows with their rows of suckling pigs.

A scientist who examined 230 skulls of ancient Egyptians reported that the practice of pulling diseased teeth was apparently not known.

Florida scientists have found that zinc is helpful in treating the bronzing of tung oil trees, mottle-leaf of citrus trees, and certain other plant diseases.

A German psychiatrist estimates that 400,000 people in Germany may be affected by the eugenic sterilization program there, 360,000 being mental and nervous cases.

Smoked fruit is an unusual delicacy, but the Chinese preserve some varieties of the jujube in this way.

Cinchona trees—source of quinine—can be grown along the southeast coast of the Black Sea, judging by success of experimental plantings.

Language specialists reduced Navajo to writing some time ago, and now young Navajo Indians are to be taught to read and write the language.

Game animals and birds cannot tolerate crowding; even under the best range management, one bird per acre or one deer per 20 acres is about the limit.

A new device to keep a baby from sucking his thumb or scratching an infection is a transparent cuff which does not prevent him from seeing his fingers or holding a toy.

A prize of 1,000 Swiss francs for the best work on encephalitis—so-called "sleeping sickness"—has been offered by the Berne University Foundation for the Advancement of Researches on Encephalitis.

## WITH THE SCIENCES THIS WEEK

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## PUBLIC SAFETY

What proportion of accident victims have alcohol in the blood? p. 376.

## SEISMOLOGY

How was news of the Honduras earthquake first received? p. 376.

## MEDICINE

# Substitute for Morphine Found After Long Search

**New Substance Can Now be Made Under Government License for Further Trials on Patients**

**A**FTER years of painstaking research, scientists have produced a new derivative of morphine in the course of experiments directed toward the discovery of a non-addicting form of morphine.

Dihydrodesoxymorphine-D is the name of the new drug. It was made by Dr. Lyndon F. Small, University of Virginia research chemist. It is ten times as effective as morphine in relieving pain.

Given as a substitute for morphine to persons addicted to the latter drug, the new product satisfied the cravings of the addicts and relieved the painful abstinence symptoms that follow withdrawal of morphine. This indicated that it also might be habit-forming.

Tests with monkeys and other animals indicate that these animals develop tolerance to the new drug as they do to morphine. It is not certain, however, that experiments on monkeys are a correct index of the new drug's addiction or habit-forming property for man.

## Final Test

The final test of this point is now about to be made. Patients suffering from severe cancer and advanced tuberculosis are sure to become addicted to morphine, because that is the only drug which will control their pain and cough. A group of such patients will soon be given the new drug instead of morphine to relieve their suffering. If they fail to develop addiction to the new drug, dihydrodesoxymorphine-D will be hailed as the long-sought, safe substitute for morphine, and possibly as an aid in the prevention of narcotic drug addiction. If it can be used in the case of persons already addicted to narcotic drugs, it might aid in their "cure."

Since Dr. Small can produce only a limited amount of the new morphine in his laboratory, he has patented his discovery and given the patent rights to the Secretary of the Treasury. The

Commissioner of Narcotics is now able to license manufacturing firms to produce enough of the new drug to complete the clinical trials.

The discovery of dihydrodesoxymorphine-D was the result of a concerted attack on narcotic drug addiction by several groups of scientists working under the guidance of the National Research Council. Cooperating with the National Research Council's committee have been the U. S. Public Health Service, the Narcotic Bureau of the U. S. Treasury, the University of Michigan and the University of Virginia. Members of the National Research Council drug addiction committee are:

## The Committee

Dr. William Charles White, National Institute of Health, U. S. Public Health Service, chairman; H. J. Anslinger, U. S. Commissioner of Narcotics; Prof. Charles W. Edmunds, University of Michigan; Dr. Ludvig Hektoen, Director, McCormick Institute for Infectious Diseases; Prof. C. S. Hudson, U. S. Public Health Service; Prof. Reid Hunt, Harvard University; Dr. Frederick B. LaForge, Bureau of Chemistry and Soils, U. S. Department of Agriculture; Prof. Torald Sollmann, Western Reserve University; Dr. Walter L. Treadway, U. S. Public Health Service; Prof. Carl Voegtlin, National Institute of Health, U. S. Public Health Service; and Prof. Francis G. Blake, Yale University, chairman of division of medical sciences, National Research Council.

At the University of Virginia a research laboratory was established under Dr. Small's direction for chemical analysis and synthesis of alkaloid substances related to or similar to morphine. Because few American chemists had worked on alkaloid chemistry in the past 25 years, it was necessary at the start of the work to import chemists from Europe for Dr. Small's laboratory. Dr. Small himself spent two years in narcotic research in Europe. The "imported" chemists who have



## EARTH'S OLDEST EGG

*The proudest product of the Chinese delicatessen industry would rate as extra strictly fresh alongside the 225,000,000-year-old fossil under the microscope of Dr. Llewellyn Price, Harvard Museum paleontologist who discovered it in the Permian Red Beds of Texas.*

worked with him are Dr. Erich Mosetting and Dr. Alfred Burger.

At the University of Michigan another research laboratory was established under the direction of Prof. C. W. Edmunds and Dr. Nathan B. Eddy, for biological testing of the narcotics and their substitutes.

All clinical work is being done under the direction of Dr. Walter Treadway, chief of the division of mental hygiene, U. S. Public Health Service.

Funds for the work are being provided by the Rockefeller Foundation.

*Science News Letter, December 15, 1934*

## PALEONTOLOGY

## World's Most Ancient Egg Discovered in Texas

**T**HE world's oldest fossil egg, approximately 225,000,000 years old, has been found in the Permian Red Beds, an exceedingly ancient geological formation of north central Texas, by the recently returned expedition from the Harvard University Museum of Comparative Zoology.

The egg, three inches long and rusty



in coloring, is more than twice the age of previously known specimens, the famed dinosaur eggs of the Gobi desert being about 100,000,000 years old and the oldest known to science previous to the present discovery.

It is one of the most primitive eggs ever laid on land. Prior to that time animal eggs had always been deposited in water, a feature retained from the fish ancestry of the amphibians. Unhatched, and preserved with but little distortion, the fossil gives an accurate conception of the egg's original shape and also of the character of the shell, which is slightly cracked in various places. A microscopic study of this shell is now under way to determine the structure of the limy covering.

#### May Be Ophiacodon

The egg cannot be definitely associated with any particular animal, but it is believed to be that of a large lizard-like animal known as *Ophiacodon*, a creature with an exceptionally large head and short limbs, measuring about six feet from snout to tip of tail. The partial skeleton of an animal of this kind was found near the egg.

Scientists have been searching in this region since 1878 for fossils but until the Harvard expedition not even a fragment of a fossil egg was discovered. The fossilization of such a delicate object and its preservation for such a long time must have required unusual circumstances.

A huge inland sea is believed to have existed during the Permian period, covering much of the states of Texas, Kansas and Oklahoma, with animals living along its shores. That these animals were present in great numbers is shown by the remains of thousands of fossils found in these "badland" patches of today.

#### Laid Near Water

The egg was probably laid close to the water and was quickly covered by the accumulating clays of the shore line, along with the bones of other animals carried in by the water, there to begin fossilization, it is believed.

Additional hundreds of feet of sediments eventually left the egg deep under ground. After lying there for a period of 225,000,000 years the fossils have now come to light through the gradual erosion of the overlying deposits. These ancient sea beaches are quite numerous regions of the Southwest, varying in color from vermilion to dark maroon and occasionally purple. The

deposit is mostly joint clay and sandstone with several thin layers of limestone.

What is probably one of the best fossil skulls of its kind ever found in this area, that of an *Eryops*, a salamander-like amphibian about eight feet long, was also brought back by the expedition, which was headed by Llewellyn Price and Theodore White, both of the Museum staff.

The skull is 26 inches long and 14 inches wide, and exceptionally well

preserved. The exact relationships of the skull bones to each other can be discerned, since the skull was not crushed by the weight of the overlying clay and sandstone. It will also be possible to determine the size of the brain and thus the nervous organization of the animal, as well as the creature's place in the fauna of its time.

The egg has already been placed on exhibition at Harvard and the fragments of the skull are being assembled for display in the museum.

*Science News Letter, December 15, 1934*

#### MEDICINE

## Tuberculosis Test Material Isolated in Pure Crystals

Victory in Sixty Year Battle is Considered Great Advance in Medicine's Warfare Against White Plague

A GREAT advance in medicine's warfare on the great white plague, the obtaining of tuberculosis test material in pure crystals, has just been made by Dr. Florence Seibert of the Henry Phipps Institute, Philadelphia.

For 60 years scientists have been endeavoring to isolate in pure form this substance of the tuberculosis bacillus. It, like tuberculin, allows the making of a simple skin test to tell whether or not a person or animal has tuberculosis. The new purified substance will be of immediate application to human patients.

Scientists have known for 60 years that this substance was there in the TB "germ" and they have been using it in tuberculin tests on man and in vast programs of tuberculosis eradication in cattle to insure a safe milk supply. But it has never before been available in pure form.

The isolation of this new substance, called the purified protein derivative of the tubercle bacillus, may be likened to getting out of the pancreas pure crystalline insulin for treating diabetes. Using the old tuberculin would be like using a preparation of the whole pancreas to treat diabetes. The insulin would be there but so would many other substances. Old tuberculin contained the tuberculosis detective, but it also contained many other things.

To produce this important protein substance, tubercle bacilli were grown on an inorganic medium and by special

chemical methods the pure crystalline substance was isolated. Dr. Seibert has reported technical details of the isolation in the *American Review of Tuberculosis* (Dec.) Her work was done under the auspices of the medical research committee of the National Tuberculosis Association, largely supported by Christmas seal sales.

*Science News Letter, December 15, 1934*

#### PHYSICS—AERONAUTICS

## Stratosphere Balloons Rising to 17 Miles

THE working of small unmanned stratosphere balloons sending back continuous reports by radio from altitudes of over 17 miles was described by Prof. J. M. Benade, distinguished Indian physicist from Forman Christian College at Lahore, India, to the American Physical Society.

Prof. Benade who is the "right-hand man" of Prof. Arthur H. Compton on the radio-balloon phases of cosmic ray research and inventor of the method reported to the Society with Dr. R. L. Doan of the University of Chicago.

The apparatus transmitting stratosphere temperature, pressure and cosmic ray intensity weighs only ten pounds, said Prof. Benade. Temperature and pressure data are transmitted by radio signals controlled by two magnetic vibrators, each of whose motion is de-

terminated by stratosphere conditions at the given altitude.

Cosmic ray intensity is transmitted by a special electrometer measuring the electrification of air molecules in the apparatus. Gradually the air ions formed by cosmic rays charge up the electrometer which is arranged so that

for a given constant charge it will energize a photoelectric cell. The photocell current then cuts off the radio transmitted. The frequency with which the incoming signal is interrupted is, therefore, a measure of the cosmic ray intensity at the point in question.

*Science News Letter, December 15, 1934*

#### PSYCHOLOGY

## Human Behavior Too Complex To be Studied Statistically

**T**HE BEHAVIOR of a human child is too complex to express in a mathematical formula or to study by the use of the statistics, Dr. Paul Hanly Furfey, of the Catholic University of America, told members of the Society for Research in Child Development. The use of measurement and statistical analysis, probably the most representative technique now employed by American child psychologists, was condemned by Dr. Furfey as not being practically useful.

"Those who loyally follow the assumptions of the statistical method to its ultimate conclusion, calculating tetrad differences and fitting Pearson curves, are merely performing a sort of sacred rite, interesting and stimulating to themselves, perhaps, but without scientific significance," Dr. Furfey declared.

"The physicist proceeds by measuring his quantities as objectively as possible and then subjecting these measurements to a mathematical analysis which often succeeds in discovering relationships not apparent on a superficial examination of the data," Dr. Furfey explained.

"We psychologists have perhaps, more or less unconsciously, imitated these methods in the past, hoping that a method so brilliantly successful in another science would prove equally successful in our own.

"Too many of us have nourished a secret ambition to be the Einstein of psychology, to discover some formula—preferably a rather unintelligible one—which would summarize neatly a great mass of experimental data."

The physicist is able to deal with quantities that remain constant during his experiment or which change according to simply expressible laws, Dr. Furfey explained. But the position of the psychologist is not so easy. It is doubtful whether there are any behavior traits constant enough to be treated by

mathematical analysis, he said. Certain abilities, such as that known as general intelligence, may be constant enough so that it is useful to measure them mathematically. But when we turn from the ability to behave in certain ways to the actual behavior of the child, the difficulties begin to multiply.

The physicist can also isolate two variables such as temperature and expansion rate for mathematical study. Child behavior is too complex to make such a procedure possible.

Observation of the child and his environment, and comparison, following methods in use in the biological sciences, were recommended by Dr. Furfey to replace the technique of measurement and statistical analysis.

*Science News Letter, December 15, 1934*

#### PLANT PATHOLOGY

## Campaign to Save Elms Covers Historic Ground

**T**HE SCENE of George Washington's first field venture against the British is to be the theater of an entirely different kind of warfare during the coming winter and spring. And just as Washington struck there for all America of the future, so the Government campaigners against the dreaded elm disease will be fighting for America's most beautiful trees not only in the East but far into the South and West.

With \$527,000 of PWA funds, the Federal forces will move into the area around New York City, to start a campaign of extermination against all trees found to be harboring the disease or the beetles that carry its causal fungus. In the wooded country, men of the CCC will cut down and destroy the sick and dead elms. In the cities, workmen under the direction of experts will take out the doomed trees, sawing them limb by limb as they stand rather than felling them, to avoid damage to telephone and electric wires as well as to buildings. This greatly increases the cost of removal, but the expense cannot be avoided.

An area with a radius of some 45 miles around New York City is known to harbor the diseased trees. Elimination must be made complete in this region,



### THE RAINS BECOME BOLDER

This diagrammatic map shows why the Corn Belt had deadly drought last summer, but has been receiving saving rains this fall. The upper line of arrows shows the approximate path of the rain-bearing summer "lows." In normal years these dip down into the country, perhaps as far south as Kansas, then turn and slide off the map, usually through the St. Lawrence valley. When they just skim the top of the map, as they did last summer, drought comes. The lower arrow-line shows how the autumn storm areas have been driving in far to the south of their usual turning point, and then counter-marching squarely up the great central valley.

or the disease will start over again. In addition, a ten-mile "safety zone" outside the known infested area is also marked for cleaning up. In all, 5,000 square miles, containing 3,000,000 trees, must be policed.

Just as Washington frequently had to fight without enough ammunition, so the fighters for America's elms must go into this battle without sufficient funds

to complete the whole campaign. It has been estimated that another million dollars will be needed. Friends of the elms feel sure that the money will be forthcoming in time, if people realize that their own elms, even those as far from the scene of action as the Pacific Northwest, are endangered, unless the enemy is driven out before next June.

*Science News Letter, December 15, 1934*

#### PSYCHOLOGY

## Writings of Gertrude Stein Those of Woman Without Past

A POSSIBLE explanation, on a scientific basis, for the bewildering if amusing writings of Gertrude Stein has been vouchsafed by the Editor of *The Journal of the American Medical Association* (Dec. 1).

"Her writing seems to be the result of a stream of consciousness of a woman without a past," he says. Further explanation is, in part, as follows:

"Those familiar with such symptoms as automatic writing, palilalia, perseveration and verbigeration are inclined to wonder whether or not the literary abnormalities in which she (Miss Stein) indulges represent correlated distortions of the intellect, or whether the entire performance is in the nature of a hoax, and that Miss Stein produces her literary effusions with her tongue in her cheek.

"Palilalia is a form of speech disorder in which the patient repeats many times a word, a phrase or a sentence which he has just spoken. In addition, the speech tends to be uttered more and more quickly and less distinctly. . . .

#### Verbal Perseveration

"An analogous condition is palilogia, a term sometimes applied to that form of rhetoric whereby the word or sentence is deliberately repeated for purposes of emphasis. Then there is also verbal perseveration, with the same word or phrase repeated as though the original idea persisted for an undue length of time in the patient's mind to the exclusion of fresh incoming ideas . . . .

"Now it is interesting in surveying the writings of Gertrude Stein to find that Miss Stein worked at Radcliffe with Münsterberg and that she wrote a paper, later printed in the *Harvard Psy-*

*chological Review* for September, 1896, under the title 'Normal Motor Automatism,' by Leon M. Solomons and Gertrude Stein. In their experiments, Mr. Solomons and Miss Stein attempted to investigate the limits of their own normal automatism, undertaking to see how far they could split their own personalities in a deliberate and purely artificial way. They were successful, according to B. F. Skinner (*Atlantic Monthly*, Jan., 1934), to the extent of being able to perform many acts, such as writing or reading aloud, in an automatic manner while carrying on at the same time other activity. Miss Stein reported that spontaneous automatic writing became easy after a little practice. Thus she said:

#### Running in the Mind

"A phrase would seem to get into the head and keep repeating itself at every opportunity, and hang over from day to day even. The stuff written was grammatical, and the words and phrases fitted together all right, but there was not much connected thought. The unconsciousness was broken into every six or seven words by flashes of consciousness, so that one cannot be sure but what the slight element of connected thought which occasionally appeared was due to these flashes of consciousness. But the ability to write stuff that sounds all right, without consciousness, was fairly well demonstrated by the experiments."

"Obviously, therefore, the writing of Miss Gertrude Stein, such as appears in her plays, books and poems, is quite the same as she developed when experimenting with spontaneous automatic writing.

"Mr. Skinner points out that the ordinary reader cannot infer from this

writing that the author possesses any consistent point of view, because there is seldom, if any, intelligent expression of opinion.

"Her writing seems to be the result of a stream of consciousness of a woman without a past. The stream of consciousness is, of course, particularly well exemplified in some of the writings of James Joyce in *Ulysses*. Mr. Skinner is convinced that this spontaneous automatic writing by Miss Stein is that of a second personality successfully split off from her conscious self, and unfortunately a personality without any background, intellectual opinions or emotions. The mere fact that Miss Stein herself occasionally appears in the midst of the writings of this second personality would seem to be the proof of the opinion."

*Science News Letter, December 15, 1934*

#### BIOLOGY

## Ultraviolet Rays Make Rare Fish Transparent

ULTRAVIOLET radiation, depended on by basking beach mermaids to give them a fashionably dusky sun-tan, is used for an exactly opposite purpose in preparing specimens of rare fish for laboratory study and museum exhibition. In a study reported to the New York Zoological Society, Miss Gloria Hollister describes its use in a new preservation and clearing technique which takes dark skin colors out and leaves the specimens in a state of X-ray-like transparency, with every delicate detail of bone structure visible.

The process makes it possible to study the internal structure of rare species without resorting to dissection—an important matter when there may be only one or two specimens in existence. Even fine external details, which may not be clearly distinguishable in the natural state, are brought out by a combination of the ultraviolet "clearing" process with the use of the right kind of tissue stain.

The process begins with the fixing of at least the larger specimens in 70 per cent. alcohol, to make the tissues firm. This step is frequently not necessary with smaller fish.

Then the specimen is immersed briefly in distilled water, after which it is transferred to a weak solution of potassium hydroxide. Following this, it is stained in a potash solution of alizarin dye, a red color of vegetable origin.

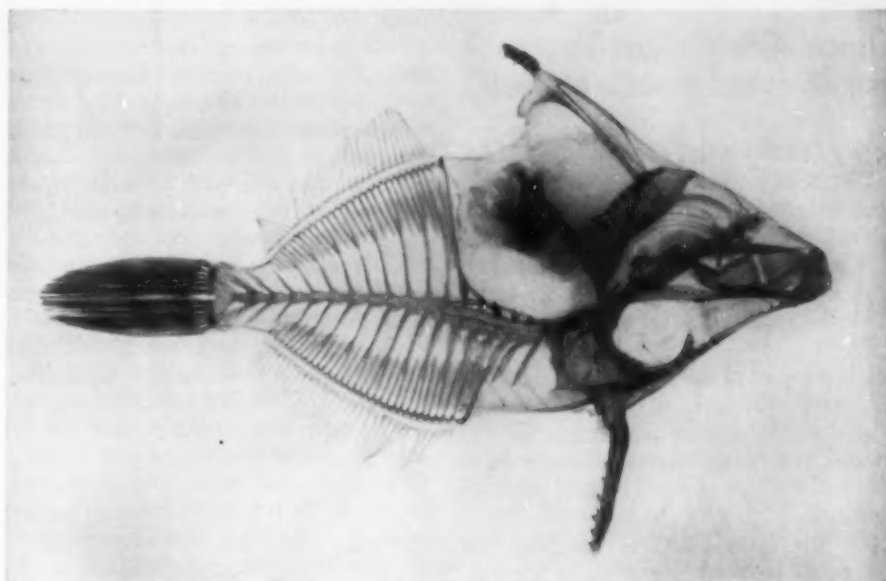


After proper staining, the fish is exposed to ultraviolet radiation, still in the alkali solution, to which glycerine is added, in one or two stages. Finally the specimen, its flesh now glassy-clear and its bones and other denser parts a delicate red, is put into a permanent glass jar, in pure glycerine with a little thymol added to keep molds from growing on it.

Miss Hollister's technique has been gradually developed over a fairly extended period of time. It is especially adapted for the preparation of fish. Some parts of it are based on the Schultze method used by her for Dr. William Beebe and other zoologists with whom she has been associated. Exact details are given in *Zoologica* (Aug. 30), a scientific journal published by the New York Zoological Society.

Miss Hollister is research associate in the New York Zoological Society's Department of Tropical Research, and a Fellow of the Society.

*Science News Letter*, December 15, 1934



#### NO SECRETS

Ultraviolet, used by bathing beauties to give them a becoming coat of summer tan, has been used to the opposite effect on this fish in a process which makes him transparent, for study.

#### PHYSICS

## Research in Radioactivity Spurred by New Principle

**A** NEW principle of separation of man-made artificial radioactive elements from the normal substances, from which they are produced, is announced (*Nature*, Sept. 22). The discovery is expected to speed research in the field of atomic studies of how the smallest unities of matter are composed.

Drs. Leo Szilard and T. A. Chalmers of the physics department of famous St. Bartholomew's Hospital of London describe a method, which they call "a new principle of separation," for concentrating an artificially produced radioactive element even in the case where the radioactive element is an isotope of the original element.

Thus, for example, by bombarding iodine crystals with neutrons it is possible to produce a radioactive form of iodine but it has hitherto been impossible to separate it from the iodine crystals in the original target because both the radioactive form of iodine and the normal form are isotopic. Chemically isotopes are indistinguishable.

The London scientists report that now they have found a way of separating the two forms of iodine.

Their method is based on the following reasoning:

1. It is logical to expect that atoms of an element struck by neutrons in atomic collisions should be removed from the compound. These impacted atoms frequently are radioactive.

2. Around the target, therefore, would be a swarm of struck-atoms. But normally there would be a constant interchange between these free radioactive atoms and the normal non-isotopic atoms still in the target. Experiments should thus show, as they do, that part of the radioactivity is still in the material of the target.

3. BUT—if the impact experiments are carried out under conditions in which this interchange is impossible or considerably reduced, it should be possible to obtain the "free" radioactive element. Chemical changes like reduction and precipitation might then be able to remove the radioactive atoms permanently from the scene.

In analogy the trick would seem to be that by controlling the conditions of the experiment a "one-way street" is created, in a chemical sense, along which radioactive atoms can travel. Their re-

turn, however, is prevented. One might think of the "street" as a hill down which balls can roll but not come back.

In experiments with iodine compounds Drs. Szilard and Chalmers used a vapor of pure iodine as the blocking condition which prevented, considerably, the radioactive atoms from rejoining the target of ethyl iodide. The pure iodine somehow protected the radioactive isotope, they say.

The method should be especially valuable for the many radioactive experiments on elements having atomic numbers higher than 30. Below atomic number 30 artificial radioactivity produced by neutron impact commonly creates substances having different chemical properties. Thus a radioactive gas may be created from a solid element, just as radon gas is produced by naturally disintegrating radium.

Above atomic number 30, however,—as in the case of arsenic, bromine, iodine, iridium and gold—radioactivity can be produced, but most of it still stays in the target. Its presence can be detected but it is most difficult to concentrate it. The new British method appears to solve this baffling problem. For iodine, it is reported, a concentration of the radioactivity ten times more than normal has been achieved.

*Science News Letter*, December 15, 1934

In the 500 years when the Valois and Bourbons ruled France, 21 French kings died from tuberculosis, says *Hygeia*.

## PUBLIC SAFETY

**Quick, Convenient Test For Drunkenness Urged**

**W**HAT traffic and police officers need to check drunken driving is a quick, accurate and legally accepted test to tell when a driver is intoxicated. This is the consensus of opinion expressed at the meeting of the Highway Research Board of the National Research Council.

The report of the committee on traffic, whose chairman is W. A. Van Duzer, director of vehicles and traffic of the District of Columbia, revealed new findings about intoxicated drivers and accidents.

While intoxication is listed as the cause of only 10 per cent. of all accidents reported to the police, the committee's report states there is almost a certainty that the figure is too low due to the underreporting of drunkenness as a cause of accidents.

A study made independently at Uniontown, Pa., has shown that alcohol can be detected in the blood of nearly half the people taken to hospitals after accidents there. The committee withheld comment on this finding but urged that similar investigations be made through the country to check the results obtained.

How widely divergent is public opinion about drunken driving as judged by the laws on the subject, is shown by the fact that penalties may vary in fines from one cent to \$300 and in imprisonment from one day to five years.

*Science News Letter, December 15, 1934*

## PHYSICS

**Electric Eye Helps Make Straight Stamps**

**A** POSTAGE stamp is just a stamp to most people—something that goes on a letter or parcel and nothing more—but to the great army of stamp collectors a postage stamp is a sort of work of art in which perfection is of tremendous importance.

The collectors, in their ardor for stamp perfection, have bombarded the U. S. Bureau of Printing and Engraving, which prints the Nation's stamps, with thousands of complaints, requests, and suggestions. They were not unheeded.

Alvin W. Hall, director of the bureau, has revealed that because of the

many complaints by collectors about stamps being out of alignment, Henry Holtzclaw, one of the bureau's engineers, has been assigned to the task of straightening the alignment of stamp perforations. In two years of work the engineer has achieved remarkable results with photoelectric cells.

These cells, acting on the opposite borders of stamps, serve as automatic eyes. The moment the perforator veers from center, the cells activate a series of compensating mechanisms which put the perforator back on the right line. Director Hall believes success is near.

These perforators during the last fiscal year, in helping to get out 12,000,000,000 United States postage stamps, punched 370,000,000,000,000 (370 trillion) holes along the borders of the stamps. The paper which fell from the holes weighed 35 tons.

*Science News Letter, December 15, 1934*

## SEISMOLOGY

**Earth Sent Own Messages On Recent Earthquakes**

**E**ARTH'S rigid rocks, and its iron core, proved faster messengers of the Chilean and Honduran earthquakes than did the wires man strings along the surface. The Honduran earthquake occurred on the night of Sunday, Dec. 2. Early on Monday morning telegrams began to arrive in Washington, informing the U. S. Coast and Geodetic Survey and Science Service of the records traced on seismographs of observatories all the way from Tucson, Ariz., to San Juan, P. R., and making possible the location of an epicenter in Honduras. Only on Tuesday, Dec. 4, did meager reports trickle through a patched-up communication system to tell the world of wreckage in the interior of the Central American country.

Similarly, instrumental reports of the Chilean earthquake were in the hands of scientists in Washington, D. C. some hours before telegraphic reports of damage in the northern mountain provinces came through.

The seismographs also brought news of a Thanksgiving evening earthquake centered in the seismically active Colima area on the west coast of Mexico.

The instrumental reporting of earthquakes is maintained through a cooperative arrangement of the U. S. Coast and Geodetic Survey, Science Service, the Jesuit Seismological Association and numerous universities.

*Science News Letter, December 15, 1934*

**IN SCIENCE**

## ICHTHYOLOGY

**Factory Wastes Made Harmless to Fish**

**W**HAT is believed to be the first adequate method of stopping sporadic fish killing in Michigan streams has been perfected and installed by the Chevrolet Motor Company, at Flint, through direct treatment of cyanide-bearing wastes before being discharged from the plant into the Flint river.

The automobile concern has installed the equipment in cooperation with the Michigan State Department of Conservation and the Michigan State Stream Control Commission.

Solutions containing cyanide are used in most metal-cleaning processes, and a number of fish killings have occurred in various parts of the state in the past five years as a result of discharge of the highly toxic waste.

The equipment consists of a rubber-lined steel tank forty feet in length, five feet wide and four feet high. Cyanide-bearing wastes on being received in the treatment tank are first neutralized with acid. The mixture is then aerated and the released gases are collected under a hood. They are finally discharged into the air under forced draft through a sixty-foot stack.

The waste water then may be dumped into the streams without harmful effect.

The installation is the result of a cooperative research effort conducted by agencies of the University of Michigan and the Michigan State College.

Dr. Carl L. Hubbs, director of the Institute for Fisheries Research at the University museum, undertook experiments in 1932 to arrive at the strength of cyanide solution that would prove non-toxic to fish. He also found that when such solutions are aerated they become much less toxic to fish.

The engineering experiment station at Michigan State College has published the results of the studies and conclusions of E. F. Eldridge, of the station, pointing to the method of treatment adopted by Chevrolet, which consists of neutralization and aeration.

*Science News Letter, December 15, 1934*



# SCIENCE FIELDS

## ARCHAEOLOGY

## Dunes at Rome Seaport Yield Gorgon Slayer Statue

**S**AND dunes along the coast of Ostia, ancient seaport of Rome, have given up a marble statue of Perseus, famed Gorgon slayer.

The statue shows the slayer of the Gorgon Medusa, not a bearded man with a horned helmet, as he has come to be well known through other sculpture, but a curly-headed youth holding the snaky Medusa head which he has chopped off. The marble is well preserved, only one forearm and the feet being missing.

The statue bears some resemblance to the Hermes of Praxiteles, and is thought to be from the Greco-Roman period.

To house discoveries being made at Ostia in various excavations, a museum of antiquities is shortly to be opened.

Recent finds include fragments of inscriptions of the Chronicles of the City of Rome, dating from A.D. 152. The fragments tell of amphitheater shows in Rome, a victory of Emperor Antoninus Pius over the Parthians, and the lavish gift of a citizen of Ostia towards the building of the basilica there.

*Science News Letter, December 15, 1934*

## PHYSIOLOGY

## Normal Stature Depends On Balance of Two Glands

**D**OES normal stature depend on proper balance between the big thymus gland in the chests of growing children and the tiny pineal gland in their heads?

Evidence that it does was presented by Dr. Leonard G. Rowntree of the Philadelphia Institute for Medical Research before a group of physicians. He is the leader of a research team which has done most to solve the mystery of what these two little-understood glands are good for.

Dr. Rowntree and associates have produced a dwarf race of rats by treatment with pineal gland extract. Last

spring they demonstrated that treatment with thymus gland extract speeded up growth and development in rats at an amazing rate, although it did not produce giants, Dr. Rowntree said at that time. (See *SNL*, Apr. 7, May 12, Oct. 13)

"These glands are concerned in the growth of the young and have hitherto not received the consideration in biology and medicine that seems warranted."

Dr. Rowntree showed a picture of Alice-in-Wonderland with a magic mushroom. If she ate from one side of the mushroom she became a giantess. If she ate from the other side she became a dwarf. The action of the thymus and pineal glands Dr. Rowntree likened to this fable.

Associated with Dr. Rowntree are Dr. A. M. Hanson of Faribault, Minn., who made the thymus extract used in the research on that gland, and Dr. J. H. Clark of the Philadelphia Institute for Medical Research.

*Science News Letter, December 15, 1934*

## PHYSICS

## Oxygen Squeezed From Air By Cooling With Liquid Air

**A**PPARATUS for making oxygen squeeze itself out of the air at temperatures of 297 degrees below zero Fahrenheit was demonstrated before the meeting of the American Physical Society by Prof. Charles T. Knipp of the University of Illinois.

By cooling one spot of a glass container of colorless oxygen gas with liquid air at a temperature of minus 310 degrees Fahrenheit, Prof. Knipp was able to turn the gas into its liquid form and obtained a pale blue oxygen fluid. Liquid air is cold enough to liquefy oxygen, Prof. Knipp pointed out, because four-fifths of air consists of nitrogen which liquefies at minus 319° F.

*Science News Letter, December 15, 1934*

## MECHANICS

## Birth of New Mechanics Journal Expected in March

**B**IRTH announcements of the expected appearance next March of a new quarterly engineering publication, *The Journal of Applied Mechanics*, are being circularized by the American Society of Mechanical Engineers. It will be devoted to the engineering fields of mechanics, elasticity and dynamics. J. M. Lessells will be technical editor.

*Science News Letter, December 15, 1934*

## GEOLOGY

## Automobile Radio Finds Geologic Structures

**W**HEN you park your car in a lonely but rustic spot along a road for a picnic or otherwise, and are unable to tune in on your favorite radio station with your automobile radio, get out and study the geology of the region, for you may discover an explanation there. Dr. Ernst Cloos, geologist of the Johns Hopkins University, has found that an ordinary automobile radio set may be an aid in geologic mapping by locating such "dead spots." (*American Journal of Science*.)

The phenomenon of fading of certain frequencies has been often observed by motorists driving along a road with the radio tuned to a certain wavelength. It can usually be explained by overhead electrical wires, railroad crossings, overhanging and wet trees. But when these outside influences can be eliminated, and the "dead spot" continues to exist after repeated observations, geologic irregularities at the surface and beneath may be suspected.

Dr. Cloos has found, after numerous observations, that a fault which has brought two different rock masses against each other, or a rock boundary between different formations, or steeply dipping geologic structures, offer the most favorable conditions to produce "dead spots."

*Science News Letter, December 15, 1934*

## PHYSICS

## Iodine and Bromine Made Radioactive Artificially

**U**SING super-penetrating X-rays with energies equivalent to 1,500,000 to 2,000,000 volts, neutrons have been obtained from the element beryllium, Prof. F. L. Hopwood, of famous St. Bartholomew's Hospital, London, announced on behalf of himself and six collaborators in London and Berlin (*Nature*, Dec. 8).

With these neutrons as bombarding particles, both iodine and bromine have been made radioactive by the artificial means. The half period of the radioactive iodine—its rapidity of decay—is thirty minutes, Prof. Hopwood reports.

Two types of radioactive bromine were produced, one with a half period of thirty minutes and another with a half period of six hours.

*Science News Letter, December 15, 1934*

ASTRONOMY

# No Martian Men

**Astronomers Now Feel Sure That If Life Exists  
On Our Neighbor Planets, It Is of the Humblest Kind**

By FRANK THONE

See Front Cover\*

**F**AREWELL forever, engineers of Mars!

Forever farewell, dwellers beneath the cloudy veil of Venus!

Science once gave us these romantic figures; science now takes them away.

Never, in any future Wellsian century, will a space-voyaging Columbus of the skies, rocket-spied through the millions of miles of dark and freezing void, find canals, or cities, or deep green gardens, or any other work of intelligent beings like himself, on any of the earth's neighbor-planets, great or small. Dubiously and grudgingly on one or two of them, there may be some kind of vegetation, and presumably lower animal life. But the great outer planets, Jupiter, Saturn, Uranus, Neptune, are total deserts, with no trace of anything that we would recognize as living beings, however humble.

Such is the newest verdict of astronomy, laid like a blight over the teeming romantic fancies that peopled the circling worlds which the same science had given us in its earlier days. The great globes must spin through space forever barren, not only because they are too remote from the sun and hence too cold, but because in their thick atmospheres there are lethal gases that would never let life get started at all, and would quickly snuff out any vital germs that might drift in from outer space, as some scientists have imagined this world of ours was originally colonized. And there are other gases, not deadly in themselves, whose very presence argues complete lack of that one gas essential to all life-processes—oxygen. Forever in a welter of vapors ten-thousandfold worse than the horror-imaginings of the latest war-massacre prophets, these planets are under interdict against life from the very beginning. They are the

hopeless victims of a complete and indiscriminate cosmic birth control.

The detection of life-preventing gases in planetary atmospheres, and its estimation in quantitative terms, has been the work of a number of astronomers, particularly in America and Germany. The latest and most exact work has been carried out by a cooperative group at the University of Michigan and the Lowell Observatory at Flagstaff, Arizona, long noted for the special researches on the planets conducted there. It was at Lowell that much of the pioneer study of the mysterious markings on Mars, the so-called "canals" was carried out; and it was here also that a schoolboy astronomer, Clyde W. Tombaugh, a few years ago found on a photographic plate of the heavens the long-sought image of the planet beyond Neptune, which we now call Pluto.

It was appropriate, therefore, that the astronomic work leading to the new scientific opinions as to the habitability of the planets should have been carried on at this observatory. This consisted primarily in taking photographs of the planets' light, after it had been split up

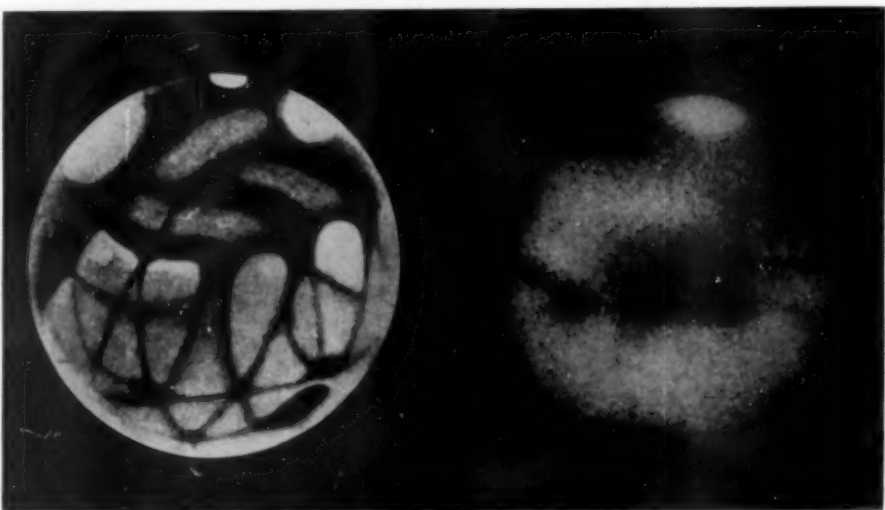
into its component colors by the grating of a spectrograph.

When light of known color-composition is passed through a gas or mixture of gases, dark lines appear here and there in what would otherwise be a continuous rainbow-hued band. These dark lines are due to the absorption of light of that particular wavelength by the gases in question. They constitute a kind of identifying set of fingerprints, for each gas always causes the same set of dark bands—in physical-astronomical language, it has a "characteristic absorption spectrum."

This kind of chemical-analysis-at-a-distance, by the study of these absorption spectra, has been used for a long time in research on the flaming atmospheres of the sun and the other stars. A spectrographic picture of the sun, for instance, betrayed the presence there of helium, long before it was discovered on the earth.

Spectrographic astronomy has even got into modern classic poetry. The great nineteenth-century English poet, Francis Thompson, whose scrappy formal education included part of a pre-medical course, was always tossing bits of science into his verse. In one of his most noted compositions, "Sister Songs," we find this:

"As the metallic vapors, that are swept



SEEN BY EYE AND CAMERA

*An observer's sketch, left, and a telescopic photograph of the planet Mars. Very little of the webwork of "canals" appeared on the unimaginative photographic plate. But the white cap at the planet's North Pole, quite conceivably snow, was undoubtedly there.*

\*The photograph on the front cover is of a painting of Mars as it might look viewed from Phobos, one of its moons, and is used through courtesy of the American Museum of Natural History.



### METHANE AT PLAY

*An explosion, started by the ignition of methane in a demonstration tunnel of the U. S. Bureau of Mines, roars out of the opening like the blast of a great cannon. Note the intense whirlpool effect in the center of the cloud.*

Athwart the sun, in his light intercept  
The very hues  
Which their conflagrant elements suffuse."

But although the spectrograph long ago began the task of telling us about the gaseous envelopes surrounding stars thousands of light-years away, the instrument was not quite up to the task of probing the atmospheric secrets of our nearer neighbors the planets. This was due partly to the fact that the planets' light is not really their own, but is reflected light, borrowed from the sun. However, the instruments at the Lowell Observatory, in the hands of Dr. V. M. Slipher, gathered the many-lined pictures of the light of the four giant planets, Jupiter, Saturn, Uranus and Neptune. These were checked against similar spectrographic records made by Dr. Arthur Adel in the physics laboratories of the University of Michigan, of certain gases in tubes under high compression, to simulate the density of the great planets' atmospheres under the pull of their enormous gravities, which are naturally far greater than that of the earth.

The upshot of these studies was the discovery of high concentrations of two life-forbidding gases, methane and ammonia, on Jupiter and Saturn, and rather convincing evidence that the same two gases are also abundant in the atmospheres of Uranus and Neptune.

No one who has ever got a strong whiff of ammonia vapor up his nose needs to be told that it is unfriendly to

animate life. In low concentrations it makes one choke and cough and wipe his eyes; and the most feared accident in ice-manufacturing plants, where ammonia is used in the refrigerating coils, is a leak or break in the machinery which would flood the plant with strong ammonia gas.

With massive quantities of ammonia suffusing the atmosphere, the four major planets can obviously offer no home to any living things resembling man or his domestic animals.

But if this were not enough, the presence of methane would clinch the argument against animal life with double finality. Methane is the same stuff that sets off disastrous coal-mine explosions, under the aliases of "fire-damp" and "marsh-gas." Oozing out of the wet muck of swamps and meeting the oxygen of the air, it dances as the flickering flames known variously as "will-o'-the-wisp, Jack-o'-lantern, and *ignis fatuus* or "fools' fire."

Methane is not confined in its earthly activities to causing disasters in mines and bewildering wayfarers on the marshes at night. It has a highly useful work in the world, and does it every day for a very large proportion of the American people. Methane is the most important constituent of natural gas. Some natural gases contain 90 per cent. of their volume in methane.

Methane is not in itself particularly harmful to animate life, as ammonia is. But the fact that its keen appetite for oxygen makes it at once a useful serv-

ant in the kitchen and a menacing enemy in the coal mine is a solid argument that there is no uncombined oxygen on the planets where methane is present in large quantities in the free atmosphere. For if there were oxygen available, the methane would at once combine with it. From this union would be born carbon dioxide and water, for methane is composed of carbon and hydrogen.

It is difficult to imagine any part of the solar system as being wholly without oxygen. But if there is any oxygen present on these methane-ammonia-immersed planets, it must be locked up in some compounds, possibly deeper within their massive bodies.

There are other reasons, longer known, why life on the great outer planets is improbable. Though they are huge, their mass is not proportional to their bulk. Their average density is much less than that of the earth. It is quite possible that they do not have anything like the earth's solid crustal surface, on which life can find a foothold.

Again, if life were present, it would have to be a flat and crawling kind, for the attraction due to gravity is of course many times that of the earth. Creatures with entirely different kinds of muscle and bone would have to be evolved, to stand up against its terrific pull.

These outer planets are so remote from the sun that plants, on which animals depend for food, might have trouble catching enough light to carry on their existence. The temperatures also may be so low, because of their dis-

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#### TROY'S HEROES BURIED IN URNS

*An American expedition has discovered the long-sought cemetery where the Trojans lie buried. Paris, who kidnaped and fought for the beautiful Helen, his brother Hector, his step-father King Priam, or other heroes made famous by Homer may be among the unmarked remains in the rows of funeral urns. The jars contain only ashes and remnants of burnt bones and a few small pottery objects and ornaments that survived the funeral pyres.*

tances from the central stove of the planetary household, that life would not be possible.

However, the discovery of methane has set a lower limit to possible surface temperatures. Dr. Henry Norris Russell of Princeton University pointed out that at a temperature of 161.4 degrees below zero Centigrade, this gas becomes a liquid, unable to betray its presence through reflected rays. Of course, under the different gravity and atmospheric-density conditions on the great planets this low boiling point of methane might be different. Nevertheless, methane's existence as a gas on the outer planets is at least some indication that their surfaces are not absolutely frigid.

If the absence of any of the familiar life-gases on the outer planets, and their replacement by death-gases, set a puzzle to the speculative science of "astrobiology," the presence of a great deal too much of one of them, carbon dioxide, has recently upset the claims of one of the inner planets, Venus, to be the most probable extra-terrestrial abode of life.

On earth, green plants find the fraction of one per cent. of carbon dioxide in the atmosphere sufficient to supply raw materials for food-making. The most recent of the Lowell Observatory-University of Michigan studies indi-

cates that the atmosphere of this brightest-shining of all the planets contains a concentration of carbon dioxide about ten thousand times greater than that in the earth's!

That looks very like much too much of a good thing. At too-high concentrations, carbon dioxide is not an inert gas but an active poison to animal tissue. If plants exist on Venus, they must find their work exceedingly easy. If animals (or men) live there, it can be only because they have evolved a super-earthly tolerance to this waste-product of respiration. Besides, there has been no evidence yet that free oxygen and water vapor are found on Venus; and you cannot have life without these things.

Mercury, the innermost of the planets, and newly-discovered Pluto, remote on the frontier of the solar system, are given short shrift as homes for life, and partly for the same reason. They are both quite small, so that their force of gravity has not sufficed to hold any atmosphere at all. They are as dry and breathless as our own moon. Furthermore, Mercury is so close to the sun that it was burned crisp ages ago, while Pluto suffers from the opposite ill of too great remoteness from the central source of light and heat.

There remains Mars, old reliable

mysterious planet of the "canals." Oxygen is known there, and what may be clouds of water vapor sometimes appear on its face. White polar caps, that may be snow, appear and vanish with the proper seasons.

All this looks promising. But the planet's small mass suffices to hold only a thin blanket of atmosphere over its surface. Oxygen may be insufficient for full breathing, water may be lacking for full slaking of thirst. Through the thin air the sun beats down without mercy by day, making things very hot indeed. Through the same thin air the day's captured hoard of heat quickly escapes at night. Daily temperature ranges from the Equator to the South Pole are not encouraging to the higher life.

Life on Mars? Perhaps—lichens, mosses, bacteria and such small fry. But a race of super-braintrusts, constructing mazes of titanic canals? Highly dubious, to say the least.

So far as we have any real scientific knowledge, the earth is the only one of the planets with life on it. And we do not know, we cannot even guess, whether any of the uncountable millions of suns visible in our share of space has so much as a single planetary offspring.

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Science News Letter, December 15, 1934

#### MARINE BIOLOGY

### Barnacles are Crustacea Not Mollusca

**T**HROUGH error, the photograph on the cover of last week's SCIENCE NEWS LETTER (SNL, Dec. 8) was captioned "Malignant Molluscs." These interesting creatures belong to the division of *Crustacea*, which also includes the lobster and the crab.

Science News Letter, December 15, 1934

## ● RADIO

Tuesday, December 18, 4:30 p. m.

**PREVENTION OF FOOD POISONING,**  
By Dr. Karl F. Meyer, Director, George  
Williams Hooper Foundation for Medical  
Research, University of California.

In the Science Service series of radio addresses given by eminent scientists over the Columbia Broadcasting System.

## ARCHAEOLOGY

## Stone Age Skeletons Add Chapter to Troy's History

THE long-sought cemetery of the Trojans and the skeletons of some of the pioneers who first settled Troy are two notable discoveries announced at Cincinnati recently by Dr. Carl Blegen of the University of Cincinnati.

Summing up results of the third Trojan expedition of the University, Dr. Blegen told of finding a hitherto unknown place of settlement at Troy. It lies three and a half miles from the hill of the Trojan citadel, where Greeks and Trojans battled. At this marginal point around the much-tramped country, Dr. Blegen unearthed four graves containing skeletons about 5,000 years old and apparently belonging to people who had not emerged from the New Stone Age. These he pronounced to be some of the first settlers of Troy, and a people older than any who built the nine-layered citadel. At the same settlement, less deeply buried, are later remains dating from the fourth and fifth layers of the citadel at Troy.

The citadel, Dr. Blegen explains, is often called the city of Troy. It was, however, more like a medieval castle where the king and his garrison lived and where the populace, who lived around the countryside, took refuge in time of danger.

Outside the citadel, Dr. Blegen's expedition made its second big discovery. This is the cemetery of Troy, long hunted by archaeological parties. It consists of a series of urn burials containing ashes, remnants of burned bones and traces of ornaments not entirely consumed on the ancient funeral pyres.

This cemetery belongs to the sixth level of Troy, which is the Troy of the War period. Hence, it now seems unlikely that the bones of Hector, Priam or other mighty Trojans will ever be recovered. Cremation was the custom of their day, the urns testify.

While probing Trojan house ruins, the excavators discovered a buried floor well preserved. This will give them the first opportunity at Troy to hunt around on the floor of a home of Trojan War days for the lost and discarded objects that show the life of the period.

What the Trojans left in the floor of their house remain to be investigated when the expedition takes the field for its fourth expedition to Troy, next spring.

Science News Letter, December 15, 1934

## MEMORANDUM ABOUT CHRISTMAS:

What a friendly thing it is to say  
"MERRY CHRISTMAS."

We all say it in many ways--with gifts of as many kinds as there are personalities to be given to, as well as to give.

Some of you who will read this note used one or several subscriptions to Science News Letter last year, to remember friends and relatives.

Maybe you didn't happen to use Science News Letter as a gift. If so, we ask you to consider it now; because those who have given Science News Letter in the past will do so again.

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Watson Davis

WD/TR

Editor.

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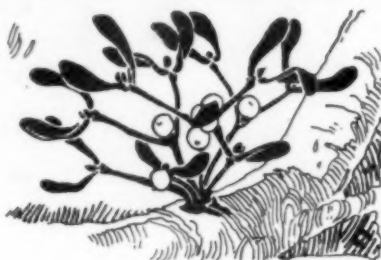
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## Third Pittsburgh Meeting of the AMERICAN ASSOCIATION for the ADVANCEMENT OF SCIENCE

Dec. 27, 1934 to Jan. 2, 1935

The programs of the fifteen Association sections and the forty-three special scientific societies meeting with the Association are rich with papers on latest work in research in the various fields of science. . . . Symposia on important medical subjects, "heavy hydrogen," the role of chemistry in education, the place of science in education, quantum mechanics, social anthropology, relation between science and scientific organizations and the press. . . . More than one thousand papers by individuals relating their most recent work in scientific research. . . . Special afternoon and evening addresses by eminent leaders in their respective fields. . . . Doctor Henry Norris Russell, Princeton University, retiring president, will speak on "The Atmospheres of the Planets." "Review of Some of the More Important Recent Advances in the Study of Blood Diseases" is the title of the address to be given by Doctor Cyrus C. Sturgis of the University of Michigan. Doctor Charles F. Kettering, of the General Motors Corporation, will discuss "Some Future Problems of Science and Engineering." Professor Albert Einstein will speak to a small and selected audience on "An Elementary Proof of the Theorem Concerning the Equivalence of Mass and Energy." A demonstration lecture on "Ramblings in Research" will be given in the Carnegie Music Hall Sunday afternoon, December 30, by Doctor Phillips Thomas. . . . Complimentary concert Sunday evening by Doctor Marshall Bidwell, organist, and the Carnegie Institute of Technology Symphony orchestra. . . . Society dinners. . . . Smokers. . . . Teas. . . . Reduced railway rates of a fare and one-third for the round trip. . . . The annual science exhibition and registration are located in the new building of Mellon Institute for Industrial Research. Section and society sessions will be held in buildings of Carnegie Institute of Technology, the new Cathedral of Learning of the University of Pittsburgh, and in other halls in the immediate vicinity. . . . The third Pittsburgh meeting promises to be one of the best in recent years.



Mistletoe

**M**ISTLETOE is one of the features of the Yuletide celebration that is older than Christianity. The Druid-taught Celts thought a great deal of the mysterious green plant with white berries that made itself at home in the trees, and from the Celts our ancestors, even the Teutons, learned much of their pre-Christian religion, including the pagan celebrations that correspond to Christmas. "Yule" is a Druid word: it is appropriate therefore that we should keep some harmless reminder of the Druid midwinter revels.

The mistletoe attracted the ancients partly because like the holly it was an evergreen, holding its glossy foliage when most of the trees lost their leaves, but also because of its mystifying habit of springing from trees, and especially from the sacred oak, as though it were a branch of different birth but of the same substance. They knew nothing of the science of parasitology; and the seeds of the plant are so tiny that they apparently escaped notice, so that the mode of transfer of the mistletoe from tree to tree on the beaks of birds remained a sealed mystery to them.

Though the fate of other plants that make up our Christmas greens is a source of anxiety to conservationists, nobody worries about the mistletoe. In spite of its romantic associations, it is a destructive parasite and as such is harmful to timber. Since it grows high on the branches of trees it is a bit difficult to harvest for the market: we moderns do not care to fuss around with the golden sickles the Celtic girls are said to have used. So down South, where most of our domestic supply comes from, men knock clumps of it out of the trees with heavy charges of buckshot!

*Science News Letter, December 15, 1934*

### ARCHAEOLOGY

## Roman Senator's House Found Under Papal Church

**I**N THE famous Lateran section of Rome, workers restoring the Church of St. John Lateran have discovered what appears to be the palatial home of Senator Plautius Lateranus himself.

For centuries this property, on which a Papal palace and other religious structures came to be built, has been known as the Lateran, after its one-time owner. The Senator lived in the days of Nero and was banished in 66 A.D. for taking part in an anti-Nero conspiracy.

Sixteen feet under ground, digging has revealed four small rooms of a fine residence. Original Roman masonry is still covered with its facing and paintings in Pompeian style. These fresco remains show fruit garlands, infant cherubs and animals in brilliant colors and an extraordinary variety of tints and shades. It is hoped that the frescoes may aid in understanding technics of painting in ancient Rome and chemical composition of the colors used.

Mosaic floors in two rooms are completely preserved, showing trefoil patterns, carefully executed.

The Italian archaeologists are taking great pains that not the smallest bit of mosaic or stucco is thrown away. Each piece is spread on a large table, according to colors, and as far as possible rearranged into pictures.

Less deeply buried than these rooms, the archaeologists found ruins of a later date. These consist of two rooms with inscriptions denoting that they were part of barracks of the imperial guard. The inscriptions mention that Rufinus and Lateranus were consuls in 197 A.D. This bears out the history of the famous Lateranus family.

*Science News Letter, December 15, 1934*

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Paul L. Brand, Washington, D. C.



# ●First Glances at New Books

## Nutrition

**FOOD AND HEALTH**—Henry C. Sherman—*Macmillan*, 296 p., \$2.50. In this book for the lay reader, an authority in nutrition presents the latest knowledge on this important subject and tells how this can be used by each individual to help in keeping himself healthy—not merely free from disease but in a state of "buoyant health." This highest state of health is attainable by adding proper eating habits to other good habits and to a good hereditary constitution, Dr. Sherman says. What constitutes proper eating habits and how they not only contribute to good health but also to a lengthening of life at its prime is set forth in simple, non-technical language.

*Science News Letter*, December 15, 1934

## Astronomy

**THE STARS FOR CHILDREN**—Gaylord Johnson—*Macmillan*, 170 p., \$1.50. Guide to the stars and planets for children and for their parents who have to tell bundles of animated curiosity where the Big and Little Dipper are. Conversational style is used with much information supplied by the two characters Grandfather and Uncle Henry.

*Science News Letter*, December 15, 1934

## Communication

**THE WORLD'S MESSENGERS**—Hanson Hart Webster—*Houghton Mifflin*, 341 p., \$1.04. Children's book on communication in all its phases including: visual signals, radio, telephone, telegraph, newspapers and the mail. Many line drawings and photographs illustrate important points, while supplementary books are indicated at the end of each chapter.

*Science News Letter*, December 15, 1934

## Mineralogy

**ORES AND INDUSTRY IN SOUTH AMERICA**—H. Foster Bain and Thomas Thornton Read—*Harper*, 381 p., \$3.50. A valuable and readable guide to the riches of South America, written by two leading authorities on mining engineering and published for the Council on Foreign Relations as a part of its thorough and useful research into world

affairs. In addition to chapters devoted to particular countries, there are general discussions which are introductory and concluding chapters discussing the mineral resources, land and people, mine ownership and the future of the continent.

*Science News Letter*, December 15, 1934

## History of Science

**THE ENDLESS QUEST, 3000 YEARS OF SCIENCE**—F.W. Westaway—*Blackie and Son, Ltd., London*, 1080 p., 21s. Voluminous and comprehensive (one page for every three years) the chronological gantlet of science is run through fifty-five chapters. It is a useful book but Anglophile in its leanings. One looks in vain for references to such eminent American scientists as Gibbs, Agassiz, Cope and Marsh, while Sarton's illuminating work on the Middle Ages is not taken into account.

*Science News Letter*, December 15, 1934

## Nutrition

**NUTRITION**—Margaret S. Chaney and Margaret Ahlborn—*Houghton Mifflin*, 436 p., \$3. A textbook for college students of home economics which stresses the relation of nutrition to health. A background of physiology and chemistry is assumed as a basis of the course for which this text is intended.

*Science News Letter*, December 15, 1934

## Astronomy

**ASTRONOMICAL SOCIETY OF THE PACIFIC. LEAFLETS 1-50, Vol. 1**—*Commercial News Publishing Co.*, 206 p., \$2.25. Leaflets of the Astronomical Society of the Pacific (which originated from the cooperation of laymen and professional astronomers at the time of the sun's total eclipse visible in California in 1889) have been a useful service in the popularization of astronomy since they began to appear in 1925. Now there have been brought together into a compact volume the first fifty of these leaflets. This resulting volume will be an addition to any shelf of astronomical books.

*Science News Letter*, December 15, 1934

## Biography

**JÖNS JACOB BERZELIUS, AUTOBIOGRAPHICAL NOTES**—Trans. by Olof Larsell—*Williams & Wilkins*, 194 p., \$2.50. What any man thinks of his own life is interesting. What an outstanding figure in the development of the science of chemistry thinks about himself is doubly so. In this commendable translation from the Swedish, Berzelius is revealed not alone as a chemist but also as a physician, business man, teacher and politician. Few scientists today are so practically minded.

*Science News Letter*, December 15, 1934

## Electrical Engineering

**PRACTICAL ELECTRICITY AND HOUSE WIRING**—H. P. Richter—*Frederick J. Drake*, 183 p., \$1.50. Elementary book for students who wish to learn the basic principles of electricity in the home. The kind of a book all husbands need whose wives want new baseboard sockets installed or fuses in a hurry.

*Science News Letter*, December 15, 1934

## Biography

**THORSTEIN VEBLEN AND HIS AMERICA**—Joseph Dorfman—*Viking Press*, 556 p., \$3.75. The story of an amazing man and his and our amazing age, this is more than a biography and of no narrow sociological interest. Remember Technocracy? It was the somewhat misguided child of Veblen, the father. The tempestuous life of Veblen in its intellectual aspects is having an influence on economic action and thinking today.

*Science News Letter*, December 15, 1934

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## NEW SCIENTIFIC DISCOVERIES

**T**HE MAGIC of new scientific discoveries fires the imagination of youth. These new discoveries necessitate revisions in every school course in science which seeks to do justice to recent progress.

In aviation, the Lindberghs recently made a trail-blazing trip. Frank Hawks devised an automatic pilot for his latest plane, and air brakes, and a beautiful stream-lined design.

The famous Sikorsky American Clipper of the Pan-American service is one example of the latest in modern commercial transport planes. Commander Settle arouses youthful enthusiasm with his trip to the stratosphere. We have a new wingless auto-gyro. We have larger and swifter transport planes than ever.

In land travel, the new stream-line train of the Union Pacific is being exhibited. The Texas and Pacific has a stainless steel, gas-driven train. There is a new V 8 gas engine. The Diesel engine offers promise of many improvements.

In water travel, the great ocean liners have reached a new peak of efficiency. The most recent submarine shows improvements which have an especial fascination for youth.

In the useful field of home conveniences, there are new methods of refrigeration, washing machines, vacuum cleaners, thermostats for cooking and heating, improvements in home lighting, air conditioning, and sanitary equipment.

Radio and telephone communication have recently improved. There is now transocean and ship-to-shore service. Pictures are sent by radio. We have the modern radio tube.

Television made new strides. The infra-red filter has improved photography. The photo-electric cell; the neon tube; the cosmic ray; sound pictures; the quantum theory—all are new and interesting developments of science which make their appeal to young minds and which call for explanation.

The ideal modern science series, which might aptly be called the What, How and Why of Science, uses the alluring material described above in achieving the two great objectives of scientific study.

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